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## CONSTRUCTING A CONTRASTIVE GRAMMAR OF ENGLISH AND DUTCH: THE DESCRIPTION OF TENSES

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The purpose of my paper<sup>1</sup> is to describe what I think could be the basis of a theory of tense for contrastive analysis. The languages which I will use in illustration are English and, occasionally, Dutch. What I have to offer at this stage will be little more than a preliminary sketch of a possible descriptive model on which much more detailed research remains to be done. It will be seen that my proposal owes a great deal to what Hans Reichenbach has written on the logic of tenses, and also to two recent studies that are directly based on Reichenbach's framework. One of them is Norbert Hornstein's article 'Towards a Theory of Tense' in Linguistic Inquiry (1977) and the other is Carlota Smith's paper 'The Syntax and Interpretation of Temporal Expressions in English' in the journal Linguistics and Philosophy (1978).

Hornstein and Smith are agreed that temporal specification in natural language is an area of grammar in which syntax and semantics, that is structures and the interpretation of structures, are two very different things. They argue that only a grammar with an autonomous syntax and with surface structure interpretation rules can account adequately for time and tense phenomena. This is the approach known as the 'extended standard theory'.

According to Reichenbach, the analysis of tenses involves three notions of time: S (the moment of speech), R (a reference point) and E (the moment of the event). To determine the temporal specification of a sentence, one must know the values of these three elements and their relations to each other. R may be simultaneous with S and it may precede or follow S. Similarly, E may be simultaneous with R and it may precede or follow R. Consider, for example, sentences (1) and (2):

(1) John came home yesterday

(2) John had come home yesterday

The tense configuration of sentence (1) is

## (3) E,R---S

which means that at a reference point anterior to the moment of speech the event mentioned in the sentence took place. Sentence (2), on the other hand, with its tense structure

## (4) E---R---S

signifies either that at a given reference point, yesterday, the event actually took place or that by that time it had already taken place. Sentence (2) is felt to be incomplete and depends for its full temporal interpretation on the context. The structures (3) and (4) represent the difference between what is traditionally known as the past tense and the past perfect. The notation used here is Hornstein's: the comma indicates that two or three elements are simultaneous (in his terminology, such elements are said to be 'associated'). The lines separating two elements are to be interpreted as establishing their temporal relation in terms of the notions 'earlier than' or 'later than'. In the case of the present tense, all three elements are associated, as (5) shows.

## (5) S,R,E

My paper will be mainly concerned with a discussion of Hornstein's and Smith's recent papers. I will try to show that in spite of a number of modifications that will have to be made to their proposals and despite some more fundamental criticism, their S, R, E framework can serve as a very valuable basis for the description of different tense systems. While discussing the main points of the two accounts, I will suggest some revisions to their rules, which will solve a number of the problems they are faced with. I will conclude by examining some English and Dutch data, to illustrate how the theory works.

The two papers under discussion have a great deal in common. Both are concerned with the description of tense phenomena in English on the basis of the S, R, E framework. Their implicit claim is that such a theory of temporal specification, if properly defined, will also be applicable to other languages.

Hornstein emphasizes the importance of a theory of tense for language acquisition, with conditions limiting what a possible semantic interpretation could be. He claims that such 'a constrained theory' will provide the child with 'a rather tight system with which to work in deciphering the tense phenomena and their corresponding temporal interpretations'. In his view, 'it is precisely this 'tightness' that offers to provide an explanation of how the semantic competence of tense and time arises' (p. 522). It is clear that such a theory should also go some way towards

explaining how the semantics of time and tense are acquired by non-native speakers.

Hornstein and Smith both define a number of basic tenses in terms of the notions S, R and E, and give rules for the interaction of tenses and adverbs. Both are convinced that it is the combination of tense and adverbial that is important for establishing the time reference. However, there are also some very significant differences between the two papers. Here I will confine myself to the more obvious and controversial points.

In Hornstein's approach, the tense-adverb rules permute S, R, E structures in certain ways to provide a temporal interpretation for the whole sentence. Besides these rules, he also proposes two general constraints on the possible permutations of the basic structures, thereby cutting down the number of operations that are allowed on the S, R, E strings. These two constraints on the reordering of S, R and E are called the associativity and linearity conditions and are defined as follows:

- (6) S, R and E cannot be associated in derived tense structure unless they are associated in basic tense structure,

and

- (7) The linear order of S, R and E in derived structure must be the same as in basic tense structure.

Hornstein deals with nine basic tenses, which are represented as in (8):

- (8) (a) Simple past: E, R, --- S  
 (b) Past progressive:  $\vec{E}$ , R --- S  
 (c) Past perfect: E --- R --- S  
 (d) Simple present: S, R, E  
 (e) Present progressive: S, R,  $\vec{E}$   
 (f) Present perfect: E --- S, R  
 (g) Simple future: S --- R, E  
 (h) Future progressive: S --- R,  $\vec{E}$   
 (i) Future perfect: S --- E --- R

This list of basic tenses is not complete. Tenses that are missing here are the past future perfect and all the perfect progressives. The past perfect progressive, for example, would be:  $\vec{E}$  --- R --- S

In addition to the notational conventions mentioned above, Hornstein puts an arrow above some of the Es to signal the durative aspect. Rules of interpretation will interpret symbols and configurations, thereby giving a temporal interpretation.

Carlota Smith's account is essentially the same. There are notational differences, of course, which I need not go into now. She, too, sets out

to deal with the way in which the three time notions interact and help to determine the temporal interpretation of sentences. It may be noted, for one thing, that her set of basic tenses is different from Hornstein's. She recognizes basically a present and a past tense only, but she also has an underlying auxiliary have, which is used for expressing anteriority, as in the case of the present perfect and the past perfect. This analysis is fairly well established in the literature as the best way to account for these tenses. However, Hornstein argues, convincingly to my mind, that such an explanation is inadequate (p. 530). In Dutch, too, that analysis would run into difficulties, given the fact that Du. hebben, when used as an auxiliary of the present perfect with past reference and co-occurring with a past time adverbial, is never ambiguous. This is exemplified by sentence (9)a. Dutch zijn, which like hebben is also often considered a higher verb, does not lead to that ambiguity either (see sentence (9)b).

(9)a. Jan heeft mij gisteravond opgezocht

('Jan came to visit me last night')

b. Jan is om drie uur vertrokken

('Jan left at three')

I will assume that Hornstein's representation of the present perfect, as given under (8)f above, will serve our purposes and that there is no need to follow Smith's analysis of the perfect tenses.

A more striking difference, perhaps, between Hornstein's and Smith's lists of basic tenses is the absence of a future tense in Smith's list. Again, I will not discuss this point here, but with Hornstein, I will assume that English has a temporal will, which serves to form the future tense, and a modal will with epistemic meaning. Formally, will traditionally belongs to the category of modal verbs, but it is the only modal verb that can be used with a temporal meaning. This temporal meaning may be pure, but, given the nature of the future, it may be coloured by modal overtones such as volition, promise, threat, uncertainty, etc. It is true that syntactic evidence exists both for and against the recognition of a future tense in English, Dutch and many other languages. Again, for our present purposes, I will assume that English has a future tense with will, and Dutch one with zullen, although both languages have a variety of other ways to refer to the future.

Hornstein's article is mainly concerned with what he calls 'normal' tensed sentences, i.e. sentences 'whose interpretations have nothing more to them than time considerations' (p. 524). However, he also deals with sentences that have a modal, a counterfactual or an imperative meaning,



tenses.

Now consider the sentences under (15), of which (a) and (b) are not ungrammatical, even though their basic TS is destroyed (in (a) it is the associativity principle that is violated, in (b) it is the linear order). The basic TS for sentence (c) is not destroyed.

- (15) John was coming home a. now (d)  
   b. tomorrow (d)  
   c. yesterday

The sentences (a) and (b) are assigned a so-called 'deviant' reading (indicated by the letter d). A problem that remains is to account for these deviant readings. For sentence (b), for example, Hornstein postulates the existence of an interpretive rule which says that the past progressive can have the interpretation 'someone was supposed to do something'. Other 'deviant' readings are accounted for by means of the same sort of (ad hoc) interpretive rules. Although I will have very little to say about Hornstein's non-temporal interpretations here, I must emphasize that an adequate theory of tense and temporal specification should also be able to handle the interpretation of tense phenomena that are not purely temporal. The question that has not been answered is what makes a combination of tense and adverb grammatical or ungrammatical and what makes it grammatical but deviant. Hornstein says (p. 524): 'I rely on an intuitive understanding on the part of the reader for the distinction that I am trying to draw ...'.

I have said that according to Hornstein a sentence retains its temporal interpretation only if the derived structure maintains the form of the basic tense structure. Two constraints limit the number of permissible derived structures. We have seen that the permutation of the elements S, R and E is brought about by the mapping of time adverbs. In Hornstein's view, the mapping is always onto R or E, so that both points can be moved around. He is not always consistent in this, sometimes choosing R and sometimes E without any clear reason. For example, to account for the grammaticalness of the combination of a present perfect and the present time adverb now, Hornstein is led to map the adverb onto R, not E, so as not to violate the associativity principle. He is not clear as to how he deals with future or past time adverbs, but it may be assumed that he maps them onto E rather than R, for otherwise his system would break down.

Carlota Smith points out (p. 44) that in independent sentences it is only the reference time that is specified, and that the event time is not specified if it differs from the reference time. E can be specified only

if R is also specified. If E and R are simultaneous, as in John came home at 3 p.m., it is impossible to tell whether the adv. phrase modifies E or R, since if it modifies one element, it will modify the other. Let us briefly consider some evidence for the view that in independent structures time adverbials are always mapped onto the reference point.

In simple, independent, sentences with adverbials like before 3 p.m., after dinner, etc. the time of the event is not specified, only the reference point and the relation between E and R are given. For example, in the sentence John came home after dinner, one does not know when John actually came home. All we know is that he came home after some specified time, dinner in this case, the reference point. As Smith says, 'it is sufficient for interpretation to know the reference time and the relation between event time and reference time. Moreover, the relation between speech time and reference time is evident if one knows the reference time' (p. 45).

At this point I wish to add a detail to our notation. Following Smith, I will use arrows to indicate the sequential relation between E and R. If E and R are simultaneous, I will go on using the comma, but if E precedes R, I will also add to the E a subscript arrow pointing to the left, and if E follows R an arrow pointing to the right. The tense structure of sentence (16), then, is (18), and that of (17) is (19).

(16) John came home before 3 p.m.

(17) John came home after dinner

(18) E,R --- S

← 3 p.m.

(19) E,R --- S

→ dinner

The same argument seems to apply to complex sentences with sentential adverbials like before we arrive, after she left, etc. In Hornstein's system, such sentences would be derived by a rule which links up the reference points of the subordinate clause. The moment of the event in the temporal sub-clause plays a minor part, as I will demonstrate in a moment.

My final comment on the mapping of adverbials concerns sentences like (20) and (21):

(20) John will have come home tomorrow

(21) John will have eaten in the cake at three.

Both sentences are perhaps odd at first sight, but they are certainly not



ungrammatical, if placed in an appropriate context. The tense structure for sentence (20) is (22)a or b, i.e. it is a future perfect. According to Hornstein, from whom I have taken these examples, the adverb tomorrow can be combined with either E or R.

(22) a. S--- E--- R  
                  tomorrow

b. S--- E--- R  
                  tomorrow

These two configurations help him to account for the ambiguity of the sentence. The first reading is that the event takes place tomorrow and the second is roughly that the event takes place before tomorrow. A more plausible explanation would be to say that tomorrow is mapped onto R, not E, but since E is left unspecified, there is no way of telling when exactly the event takes place; it may also take place (at some time) tomorrow. All we have is a reference point, tomorrow. Even though the first reading is just about possible for some speakers (probably because of the nature of the adverb tomorrow), the second interpretation, corresponding to (b), seems far more obvious, i.e. by tomorrow John will have come home.

My thesis is that in every sentence R must be specified and if it is not specified, the sentence will sound incomplete. Hence it will be rejected by many speakers, but not by all.

What can we say about sentence (21)? Hornstein points out (p. 528) that this sentence too is ambiguous. It can mean, he says, that John ate the cake at three or that by three he will have already eaten the cake. I agree that we can obtain a modal as well as purely temporal interpretation of this sentence. This ambiguity of (21) at least partly arises from the fact that, in isolation, at three may refer to the past or to the future. Since we are here only concerned with temporal readings, we can ignore the modal reading for the moment. The question is whether the sentence can also mean something like 'at some unspecified time in the future John will have eaten the cake at three', as Hornstein suggests. It seems to me that this is very unlikely, simply because the future reference point is unspecified if it differs from R, so that the eating of the cake can take place at any time before three, but not in this case at three o'clock sharp.

What are the implications these points have for our theory? I will mention just two. It means, in the first place, that the problem of Hornstein's random mapping of time adverbials onto E or R could be solved. My assumption is that in independent sentences the mapping of the time is always onto R, although sometimes the specification for the reference point has to be retrieved from the context in which the structure occurs.

Following Smith, I have added to this that E can also be specified, or at least indicated, in independent sentences, but only if R is specified (this is the case with the present perfect, where R is specified as coincident with S, and E precedes R; this explains why in many contexts the present perfect can occur with a past time verbal, but not with a future time adverbial). Consider briefly the three examples in (23):

- (23) John has come home a. yesterday  
                                   b. \*tomorrow  
                                   c. ?now/at this very moment

According to Hornstein, sentence (a) is a grammatical English sentence, even though he regards it as 'not particularly good' (p. 525). Most native speakers that I have consulted rejected it, and certainly no prescriptive grammarian would look at this sentence twice. Still, within the framework developed here, it is possible to explain Hornstein's ambivalence. The basic tense configuration of sentence (23)a is E--- S,R (24), where R is associated with the moment of speech, and is specified as such, and where the moment of the event precedes S and is specified by the time adverb. Application of the permutation rule does not change the relative positions of E, S and R, so the rule applies vacuously here. However, if R is associated with S, there seems to be a clear restriction for most speakers on modifying E by a punctual time adverbial like yesterday or at 3 p.m.. But to many speakers, sentences like (25) and (26) sound much better.

(25) John has eaten all the cakes while you were away

(26) John has taken a drink or two in the past

In Dutch, and in many other languages, past time adverbials of all sorts occur much more freely with the present perfect. In fact, the present perfect is the common form for past time reference, but there are cases where the simple past is obligatory. For example, one cannot say (27) and (28) in Dutch<sup>2</sup>:

(27)\*Hij is in het leger geweest toen de oorlog uitbrak

('He has been in the army when the war broke out')

(28)\*Waar ben jij geweest toen Kennedy werd doodgeschoten?

('Where have you been when Kennedy was shot dead?')

For the ungrammatical sentence (23)b the E would have to be shifted to the right of S and R, thus violating the restriction on linear arrangement. The grammaticalness of sentence (23)c may also be questioned. If it is a correct sentence, this may be due to the fact that now can be re-

garded as an affirmation of the reference point, leaving E unspecified to the left of S and R; however, the phrase at this very moment would seem to be too emphatic for that purpose.

The second implication of my proposal is that it will lead to a still further simplification of the system (which is important, I think, from the point of view of tense acquisition), in that the associativity and linearity constraints can now be made to apply to R and S only, except, as we have seen, in the case of the present perfect, where E may but need not be specified.

A first examination of some English and Dutch data shows that the revisions suggested here make it possible to account for at least the cases that Hornstein and Smith deal with, and it does so with the aid of a less random and more simplified procedure.

So far in describing my revisions of Hornstein's and Smith's proposals, I have confined myself mainly to an account of the interaction of tenses and adverbs in simple sentences, involving the concept of a basic tense and two constraints on the permutation of elements. Finally I should like to pay some more attention to the examples of complex sentences that I have given (e.g. (25), (27) and (28)). These were all sentences with a subordinate clause introduced by a temporal connective. Consider now also the sentences (29) - (31), which are all grammatical.

- (29) John will leave when we arrive
- (30) John will leave before we arrive
- (31) John left after Harry arrived

For the analysis of these sentences Hornstein suggests a rule which lines up the S and R points of the subordinate and the superordinate clauses, moving  $R_2$  (i.e. the reference point of the subordinate clause) to under  $R_1$  (i.e. the reference point to the superordinate clause). The event point  $E_2$  of the subordinate clause is placed accordingly (preserving the linearity and associativity relations of the basic tense structure). For sentence (29), for example, this temporal connective rule works as shown by (32) and (33) (if the tense analysis is (32), then the rule will apply to yield (33)):

- (32) S ---  $R_1, E_1$   
           S,  $R_2, E_2$
- (33) S ---  $R_1, E_1$   
       S ---  $R_2, E_2$

No principles are violated in applying the rule and therefore the sentence is grammatical. It can be demonstrated that the rule also predicts the ungrammaticalness of sentences like \*John will leave when we had arrived or \*John had left when we arrive. Hornstein deals with sentence (30) in a parallel way: (34) is the tense analysis and (35) the derived structure after application of the rule.

(34) S --- R<sub>1</sub>, E<sub>1</sub>  
       S, R<sub>2</sub>, E<sub>2</sub>

(35) S --- R<sub>1</sub>, E  
       S --- R<sub>2</sub>, E<sub>2</sub>

The grammaticalness of sentence (31) is accounted for in the same way, and so is the ungrammaticalness of a sentence like \*John left after Harry is coming, for the derivation of which the linearity constraint would have to be violated. In other words, Hornstein's temporal connective rule provides a powerful mechanism for the temporal analysis of a large range of English sentences with when, before, after and other temporal connectives.

This analysis has several advantages. Firstly, the rules and principles involved are basically the same for simple and complex sentences, as I think they should be. Secondly, it confirms our assumption that it is R, not E, that is modified by the time adverbial. In these cases, in fact, R<sub>2</sub> is mapped onto R<sub>1</sub>. Thirdly, this type of analysis also makes clear what the temporal relation is between E<sub>1</sub> and E<sub>2</sub>, including the case of sentence with already. This is something Hornstein's proposal did not do for the relation between E and R in simple sentences. Hence my revision. Fourthly, it provides an interesting way of accounting for both the factual and counterfactual interpretations of before-clauses, which we have not gone into here. And finally, the interaction of temporal connectives and adverbs is also handled rather elegantly by this approach.

There are numerous problems that I have not even touched upon in my paper. I have not dealt, for example, with the use of tenses in relative clauses, in indirect speech and in conditional clauses. These are the areas that I am currently working on. If properly developed, this theory may serve as a powerful tool for contrastive analysis.

#### NOTES

1. This is a slightly revised version of a paper read at the Eleventh Annual Meeting of the British Association of Applied Linguistics, held at Cardiff on 9 - 11 September 1978.
2. These sentences were brought to my attention by Gerard Hoppenbrouwers of the Nijmegen A.N.S. Project.